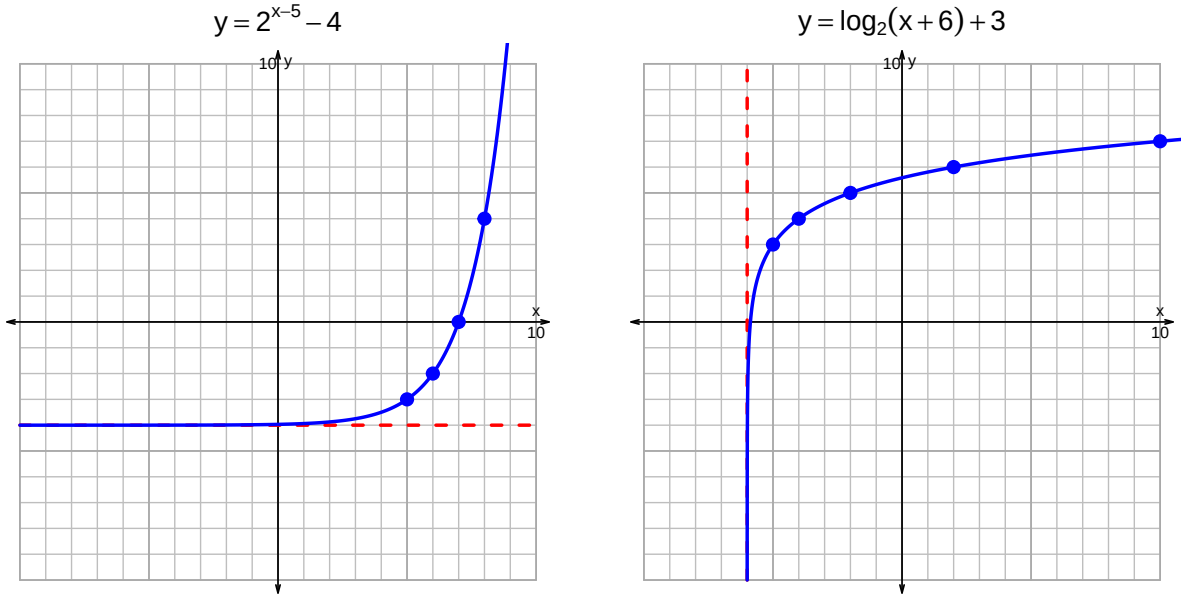
Name: Date:

S18QUIZ: EXP LOG (SLTN v218)

1. Graph $y = 2^{x-5} - 4$ and $y = \log_2(x+6) + 3$ on the grids below. Also, draw any asymptotes with dotted lines.



2. Write (but do not evaluate) the solution to the equation below by writing a logarithmic expression.

$$-17 = \left(\frac{-5}{3}\right) \cdot 10^{-4t/7}$$

Divide both sides by $\frac{-5}{3}$.

$$\frac{17 \cdot 3}{5} = 10^{-4t/7}$$

Take log, base 10, of both sides.

$$\log_{10}\left(\frac{17 \cdot 3}{5}\right) = \frac{-4t}{7}$$

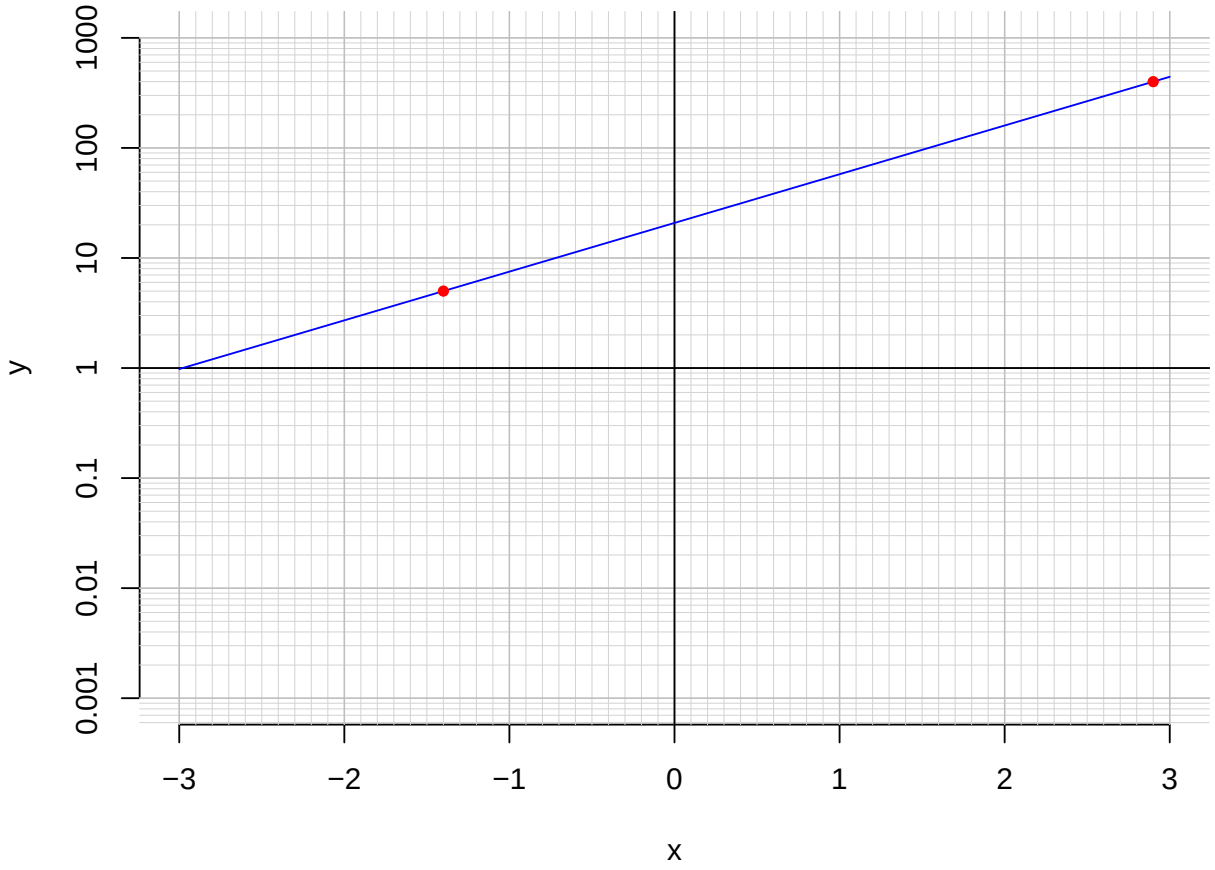
Divide both sides by $\frac{-4}{7}$.

$$\frac{-7}{4} \cdot \log_{10}\left(\frac{17 \cdot 3}{5}\right) = t$$

Switch sides.

$$t = \frac{-7}{4} \cdot \log_{10}\left(\frac{17 \cdot 3}{5}\right)$$

3. An exponential function $f(x) = 20.8 \cdot e^{1.02x}$ is graphed below on a semi-log plot.



a. Using the plot above, evaluate $f(2.9)$.

$$f(2.9) = 400$$

b. Express $f^{-1}(x)$, the inverse of f.

$$f^{-1}(x) = \frac{1}{1.02} \cdot \ln\left(\frac{x}{20.8}\right)$$

c. Using the plot above, evaluate $f^{-1}(5)$.

$$f^{-1}(5) = -1.4$$